

CLAIMS

1. Process for the manufacture of an object, curved in one or more directions,
from a package of at least one stacked ply containing polymeric fibres by the
deforming thereof at elevated temperature, characterized in that the process
comprises imposing a tensile stress on the fibres at a temperature lying
between the melting point of the fibres at the imposed tensile stress and 20°C
below the melting point, which tensile stress is high enough for the fibres to be
drawn.
2. Process according to Claim 1 wherein the temperature lies between the
melting point of the fibres at the imposed tensile stress and 15°C below the
melting point.
3. Process according to Claim 1 or 2 wherein the tensile stress lies between 5%
and 90% of the tensile strength of the fibres.
4. Process according to any of Claims 1-3 wherein the fibres are polyethylene
fibres with a tensile strength of at least 2 GPa and a modulus of at least 50
GPa.
5. Process according to any one of Claims 1-4 wherein the fibres in a ply are
arranged essentially in parallel.
6. Process according to Claim 5 wherein the fibres in a ply are at an angle to the
fibres in an adjacent ply.
7. Process according to Claim 6 wherein the package contains at least 3 plies
and the direction of the fibres is equally distributed over 360°.
8. Process according to any one of Claims 1-7 wherein the plies contain from 0
to 50% by mass of a binder for the fibres relative to the total of fibres and
binder.
9. Process according to any one of Claims 8 wherein the amount of binder is at
the most 25% by mass.
10. Process according to either of Claims 8-9 wherein the binder is a polyethylene
film.
11. Process according to any one of Claims 1-10 wherein the object is a helmet or
is dome-shaped.
12. Process according to any one of Claims 1-11 wherein the tensile stress is
imposed by fastening an outer border of the package and wherein a force is
exerted on an area of the plies located within the outer border, which force is

perpendicular to the plane defined by the outer border.

13. Object obtainable by the process of one of the preceding claims.
14. Object according to Claim 13 wherein the object is a helmet.
15. Wrinkle-free object, curved in one or more directions, comprising at least one
5 ply containing polymeric fibres, which object exhibits in different locations a different mean fibre diameter, which is the diameter common to the majority of fibres, with the difference between the greatest and smallest mean value being at least 7%.